

We Claim:

1. A composition comprising a plurality of carbohydrate encapsulated nanoparticles, wherein each of said carbohydrate encapsulated nanoparticles comprises a
5 core metallic nanoparticle about 4-8 nm in diameter and plurality of carbohydrate molecules, wherein said plurality of carbohydrate molecules comprises at least 150 carbohydrate molecules.
2. The composition of Claim 1 further comprising an aqueous solution, wherein
10 said plurality of carbohydrate-encapsulated nanoparticles are present in a non-aggregated state in said aqueous solution.
3. The composition of Claim 2, wherein said aqueous solution has high ionic
15 strength.
4. The composition of Claim 1, wherein said plurality of carbohydrate molecules
are selected from the group consisting of: mannose molecules, mannose molecule
derivatives, glucose molecules and galactose molecules.
- 20 5. The composition of Claim 1, wherein said plurality of carbohydrate molecules
are configured to bind a target molecule.
6. The composition of Claim 1, wherein said core metallic nanoparticle is about
25 5-7 nm in diameter.
7. The composition of Claim 1, wherein said core metallic nanoparticle
comprises gold.
8. The composition of Claim 1, wherein said plurality of carbohydrate molecules
30 consists of about 150-250 carbohydrate molecules.
9. The composition of Claim 1, wherein said plurality of carbohydrate molecules
are thiolated.

10. A composition comprising a plurality of carbohydrate encapsulated nanoparticles, wherein each of said carbohydrate encapsulated nanoparticles comprises a core metallic nanoparticle and a plurality of carbohydrate molecules, wherein said plurality of carbohydrate molecules comprises at least 150 carbohydrate molecules, and wherein said
5 plurality of carbohydrate molecules are selected from the group consisting of mannose molecules and mannose derivative molecules.

11. The composition of Claim 10, wherein said core metallic nanoparticle comprises gold.
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12. The composition of Claim 10, wherein said plurality of carbohydrate molecules consists of about 150-250 carbohydrate molecules.

13. The composition of Claim 10 further comprising an aqueous solution, wherein
15 said plurality of carbohydrate-encapsulated nanoparticles are present in a non-aggregated state in said aqueous solution.

14. The composition of Claim 13, wherein said aqueous solution has high ionic strength.
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15. The composition of Claim 10, wherein said plurality of carbohydrate molecules are thiolated.
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16. A method of detecting a target in a sample, comprising;
- a) providing;
- i) a composition comprising a plurality of carbohydrate encapsulated nanoparticles, wherein each of said carbohydrate encapsulated nanoparticles comprises a core metallic nanoparticle and a plurality of carbohydrate molecules, wherein said plurality of carbohydrate molecules comprises at least 150 carbohydrate molecules, and wherein said plurality of carbohydrate molecules are selected from the group consisting of mannose molecules and mannose derivative molecules, and
- ii) a test sample suspected of containing said target;
- b) contacting said composition with said test sample, and
- c) detecting the presence or absence of said target in said sample.
17. The method of Claim 16, wherein said core metallic nanoparticle comprises gold.
18. The method of Claim 16, wherein said target is a bacteria comprising a type I pili.
19. The method of Claim 16, wherein said target comprises a FimH molecule.
20. The method of Claim 16, wherein said target comprises a mannose receptor molecule.